

REMARKS

Claims 1-30 remain pending in the instant application. All claims presently stand rejected. Claim 1 is amended herein. Entry of this amendment and reconsideration of the pending claims are respectfully requested.

Specification

The Examiner is thanked for bringing to Applicants' attention that inadvertent error in the specification. Accordingly, Applicants have corrected the specification, as recited above in the amendments section.

Claim Rejections – 35 U.S.C. § 103

Claims 1-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Geva et al. (US 6,437,372).

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. § 2143.03.

Independent claim 1 recites, in pertinent part,

an active region of an optical waveguide disposed in a semiconductor layer, the active region including a p doped region and an n doped region; and

... the insulating region electrically isolating the active region of the optical waveguide from a passive region of the optical waveguide disposed in the semiconductor layer ...

Applicants respectfully submit that Geva fails to disclose, teach, or suggest an insulating region that electrically isolates an active region of a waveguide from a passive region of a waveguide.

To be sure, the Examiner cites layers 302, 303, and 304 illustrated in FIG. 3 of Geva as corresponding to Applicants' claimed “active region including a p doped region and an n doped region” and further cites lateral confinement layers 305 as corresponding to Applicants' claimed “insulating region” (see, *Office Action* issued 9/14/05, page 2,

last paragraph). However, the Examiner cites no portion of Geva as corresponding to the claimed “passive region of the optical waveguide.”

Geva states,

Lateral confinement layers or burying layers 305 are illustratively iron (Fe) doped InP. Fe-doped InP which is both electrically highly resistive and has an index of refraction lower than that of the active layer 303, enables both current confinement and transverse optical confinement.

Geva, col. 4, lines 29-33. Accordingly, Geva discloses that lateral confinement layers 305 act to provide lateral optical and current confinement. However, nowhere does Geva teach or suggest that lateral confinement layers 305 (elements cited by Examiner as corresponding to the claimed insulating region) insulate layers 302, 303, 304 (elements cited by Examiner as corresponding to the claimed active region) from a passive portion of a waveguide. In fact, applicants are unable to find any portion of FIG. 3 that could represent a “passive region of a waveguide” when the Examiner cited layers 302, 303, and 304 as corresponding to the claimed active region of a waveguide. Applicants are certainly unable to find a passive region of a waveguide that is insulated from layers 302, 303, 304 by lateral confinement layers 305.

Consequently, Geva fails to teach or suggest all elements of claim 1, as required under M.P.E.P. § 2143.03. Independent claim 20 includes similar nonobvious elements as independent claim 1. Accordingly, Applicants request that the instant §103(a) rejections of claims 1 and 20 be withdrawn.

Independent claim 13 recites,

directing the optical beam from the active region through the insulating region into a second passive region of the optical waveguide...

As discussed above, Applicants respectfully submit that Geva fails to disclose, teach, or suggest directing an optical beam from layers 302, 303, 304 (cited as corresponding to active region) through lateral confinement layer 305 (cited as corresponding to insulating region) to a passive region (no corresponding element cited by Examiner). In fact, such an interpretation is contrary to the teachings of Geva, since lateral confinement layers 305 are disclosed as providing “transverse optical confinement” (*Geva*, col. 4, line 33). Accordingly, Geva teaches away from the invention of claim 13, since claim 13 recites

directing an optical beam through the insulating region. Furthermore, Geva fails to disclose or teach a waveguide including two passive regions and an active region.

Consequently, Geva fails to teach or suggest all elements of claim 13, as required under M.P.E.P. § 2143.03. Accordingly, Applicants request that the instant §103(a) rejections of claims 13 be withdrawn.

The dependent claims are nonobvious over the prior art of record for at least the same reasons as discussed above in connection with their respective independent claims, in addition to adding further limitations of their own. Accordingly, Applicants respectfully request that the instant § 103 rejections for the dependent claims be withdrawn.

Well Known Statements/Statements Based On Personal Knowledge

The Examiner acknowledges that Geva fails to explicitly disclose at least three elements of claim 1. For example the Examiner acknowledges that Geva fails to “explicitly state the insulating region to electrically isolate the active region from the passive region...” and fails to “explicitly state the insulating layer to surround the active region.” *Office Action* issued 9/14/05, page 3. However, the Examiner compensates for these deficiencies by stating that the missing elements are obvious and therefore known to one of ordinary skill in the art.

In order to preserve rights, Applicants must seasonably challenge “well known statements” and “statements based on personal knowledge.” Therefore, Applicants respectfully traverse the Examiner’s assertion and request evidence in support of the Examiner’s position. M.P.E.P. § 2144.03. To establish a prima facie case of obviousness, all claim limitations must be taught or suggested by the prior art. The Examiner acknowledges his failure to cite references for all claim limitations, but relies instead on common knowledge or “well known” prior art. Therefore, Applicants respectfully request that the Examiner provide a reference or affidavit pursuant to M.P.E.P. § 2144.03 to support his assertion that the above three elements, acknowledged by the Examiner as not disclosed in Geva, would be obvious to one of ordinary skill in the art at the time the invention was made.

Statements of Intended Use

In addition to acknowledging that Geva fails to “explicitly state a phase shift to occur in response to a modulated charge region in the active region[,]” the Examiner also states that “it has been held that the functional ‘wherein’ statement does not define any structure and accordingly cannot serve to distinguish.” *Office Action* issued 9/14/05, page 3. However, claim 1 recites,

...wherein an optical beam that is directed through the optical waveguide and through the active region will be phase shifted in response to a modulated charge region in the active region in the optical waveguide.

The above portion of claim 1 is not merely a statement of intended use, but rather recites functions of the claim elements supported by the structural limitations contained in the claim. Furthermore, the above recited portion of claim 1 does recite structural elements including a modulated charge region in the active region.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants believe the applicable rejections have been overcome and all claims remaining in the application are presently in condition for allowance. Accordingly, favorable consideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to telephone the undersigned representative at (206) 292-8600 if the Examiner believes that an interview might be useful for any reason.

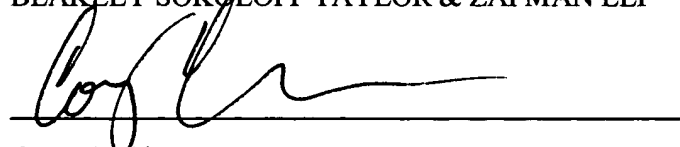
CHARGE DEPOSIT ACCOUNT

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a). Any fees required therefore are hereby authorized to be charged to Deposit Account No. 02-2666. Please credit any overpayment to the same deposit account.

Respectfully submitted,

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Date: Nov. 24, 2005



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